CLAIMS

What is claimed is:

1. An airflow sensor system adapted for monitoring air inlet airflow and air outlet airflow of a vacuum cleaner, comprising:

a vacuum cleaner air duct including an air inlet and an air outlet, wherein the air duct conducts a vacuum airflow generated by the vacuum cleaner;

a bypass tube including a first end connected to the air duct between the air inlet and the air outlet and with the bypass tube including a second end communicating with an external air, wherein the bypass tube conducts a bypass tube airflow; and

an airflow sensor positioned at least partially in the bypass tube, wherein the airflow sensor is configured to generate a normal voltage differential range when the bypass tube airflow is within a predetermined normal airflow range, configured to generate an input blockage voltage differential range when the bypass tube airflow is greater than the predetermined normal airflow range, and further configured to generate an output blockage voltage differential range when the bypass tube airflow is less than the predetermined normal airflow range.

2. The system of claim 1, wherein the first end of the bypass tube is connected to the air duct between the air inlet and a filter element positioned in the air duct.

3. The system of claim 1, wherein hysteresis exists between the input blockage voltage differential range and the normal voltage differential range.

4. The system of claim 1, wherein hysteresis exists between the normal voltage differential range and the output blockage voltage differential range.

5. The system of claim 1, with the airflow sensor system further comprising an air inlet blockage indicator that is activated when the bypass tube airflow is greater than the predetermined normal airflow range.

6. The system of claim 1, with the airflow sensor system further comprising an air outlet blockage indicator that is activated when the bypass tube airflow is less than the predetermined normal airflow range.

7. The system of claim 1, with the airflow sensor comprising a first temperature-dependent element positioned in the bypass tube and a second temperature-dependent element positioned in ambient air away from said air duct and away from said bypass tube.

8. The system of claim 7, wherein the first and second temperature-dependent elements comprise resistor temperature dependent elements.

9. The system of claim 1, with the airflow sensor comprising:

a first temperature-dependent element connected to a first voltage node and also connected to a first bridge node, with the first temperature-dependent element being positioned in the bypass tube;

a first bridge resistor connected to the first bridge node and also connected to a second voltage node;

a second temperature-dependent element connected to the first voltage node and also connected to a second bridge node, with the second temperature-dependent element being positioned outside the bypass tube and positioned in ambient air;

a second bridge resistor connected to the second bridge node and also connected to the second voltage node; and

a heater element in substantial contact with the first temperature-dependent element, wherein the heater element heats the first temperature-dependent element substantially as a function of a voltage differential across the first bridge node and the second bridge node.

10. The system of claim 9, wherein the first and second temperature-dependent elements comprise resistor temperature dependent elements.

11. An airflow sensor system adapted for monitoring air inlet airflow and air outlet airflow of a vacuum cleaner, comprising:

a vacuum cleaner air duct including an air inlet and an air outlet, wherein the air duct conducts a vacuum airflow generated by the vacuum cleaner; and

an airflow sensor positioned at least partially in the vacuum airflow, with the airflow sensor comprising:

a first temperature-dependent element connected to a first voltage node and also connected to a first bridge node, with the first temperature-dependent element being positioned in at least a portion of the vacuum airflow;

a first bridge resistor connected to the first bridge node and also connected to a second voltage node;

a second temperature-dependent element connected to the first voltage node and also connected to a second bridge node, with the second temperature-dependent element being positioned outside the vacuum airflow and positioned in ambient air;

a second bridge resistor connected to the second bridge node and also connected to the second voltage node; and

a heater element in close proximity with the first temperature-dependent element, wherein the heater element heats the first temperature-dependent element substantially as a function of a voltage differential across the first bridge node and the second bridge node;

wherein the airflow sensor is configured to generate a normal voltage differential range when the vacuum airflow is within a predetermined normal airflow range, configured to generate an input blockage voltage differential range when the vacuum airflow is greater than the predetermined normal airflow range, and further configured to generate an output voltage differential range when the vacuum airflow is less than the predetermined normal airflow range.

12. The system of claim 11, wherein hysteresis exists between the input blockage voltage differential range and the normal voltage differential range.

13. The system of claim 11, wherein hysteresis exists between the normal voltage differential range and the output blockage voltage differential range.

14. The system of claim 11, with the airflow sensor system further comprising an air inlet blockage indicator that is activated when the bypass tube airflow is greater than the predetermined normal airflow range.

15. The system of claim 11, with the airflow sensor system further comprising an air outlet blockage indicator that is activated when the bypass tube airflow is less than the predetermined normal airflow range.

16. The system of claim 11, wherein the first and second temperature-dependent elements comprise resistor temperature dependent elements.

17. The system of claim 11, further comprising a bypass tube including a first end connected to the air duct between the air inlet and the air outlet and with the bypass tube including a second end communicating with an external air, wherein the airflow sensor is positioned at least partially in the bypass tube.

18. The system of claim 11, further comprising a bypass tube including a first end connected to the air duct between the air inlet and a filter element positioned in the air duct and with the bypass tube including a second end communicating with an external air, wherein the airflow sensor is positioned at least partially in the bypass tube.